Malignant peritoneal mesothelioma presented with bilateral hydronephrosis and renal insufficiency: a case report

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Case Report

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Abstract

Malignant peritoneal mesothelioma (MPM) is an extremely rare tumor with nonspecific clinical manifestations, challenging to diagnose. Herein, we reported a case of MPM with occult onset presenting with bilateral hydronephrosis and renal insufficiency. A 30-year-old man was admitted to the urology department with recurrent bilateral low back pain. The etiology was unclear after a series of laboratory tests, imaging examinations, bone marrow aspiration, renal puncture biopsy, ascites examination, ureteroscopy, and so on. Finally, MPM was diagnosed by laparoscopic exploration and biopsy. Moreover, during the course of the disease, the patient's bilateral ureters were compressed, and the obstruction could not be relieved after the placement of ordinary ureteral stents. Percutaneous nephrostomy (PCN) or metal ureteral stenosis was appropriate in managing malignant ureteral obstruction as it could improve renal function. The onset of this case was insidious, and the diagnosis was difficult, with a poor prognosis. To date, only a handful of cases have been reported. We hope this case can provide some enlightenment for our clinical work.

1. Introduction

Malignant peritoneal mesothelioma is an aggressive neoplasm that can rapidly spread within the abdominal area. Patients with peritoneal mesothelioma usually present with an abdominal mass, ascites, and abdominal pain. The condition can be easily misdiagnosed as tuberculous peritonitis, intestinal and ovarian tumors, and another disease\[1\]. Herein, we reported a case with bilateral hydronephrosis and renal insufficiency as the first symptoms. The case was extremely challenging to be diagnosed, which was finally done based on laparoscopic exploration and biopsy. Ureteral stenting is the simplest treatment for upper urinary tract obstruction while it may not improve renal function appropriate in managing malignant ureteral obstruction. Percutaneous nephrostomy (PCN) or metal ureteral stenosis may be more effective. The aim of the present study was to provide clinical evidence for the diagnosis, treatment, and prognosis of rare MPM.

2. Case Report

A 30-year-old man was admitted to Longli County People's Hospital (Guiyang, China) on 9 July 2022 due to bilateral low back pain. Computed tomography (CT) scan showed bilateral hydronephrosis, while serum creatinine was 123umol/L. As ureteroscopy revealed bilateral ureteral stricture, bilateral ureteral stents were placed, and the low back pain was relieved. However, the condition worsened one month later when the patient developed bilateral low back pain again, accompanied by abdominal distension, abdominal pain, nausea, and vomiting. He was admitted to the department of Urology, Qiannan People's Hospital of Guizhou Province (Guiyang, China), on September 21, 2022. Enhanced CT of the whole abdomen showed bilateral hydronephrosis and bilateral ureteral stent placement, splenomegaly, and ascites. Creatinine was 305 µmol/L. Ascites examination suggested the possibility of exudate; however, the source was unclear.
The patient was then transferred to the emergency department of Guizhou Provincial People's Hospital (Guiyang, China) on September 27, 2022. Abdominal CT scan showed bilateral hydronephrosis, abdominal and pelvic intestinal accumulation, scattered gas and stool in the intestinal cavity, and scattered effusion in the abdominal cavity, bilateral ureteral stent placement. The hemoglobin was 80g/L. Serum creatinine was 259umol/L. CT showed progressive aggravation of bilateral hydronephrosis; however, the diagnosis remained unclear. Consequently, the patient was transferred to our hospital (Guiqian International General Hospital, Guiyang, China) for further treatment.

The patient was born deaf, and he was unable to speak. He is a construction worker with no history of exposure to asbestos. The patient denied any family history of malignant tumors. When first admitted to our hospital, he had an anemic appearance, no percussion pain in bilateral renal regions, soft abdomen, no tenderness, rebound pain, and no abdominal mass. Laboratory tests were as follows: Creatinine: 334 umol/L, ALT: 96, AST: 43, Hb: 75g/l, tumor markers: CEA: 0.96ng/ml, CA153: 11.27U/ml, cytokeratin 19 fragment: 12.9ng/ml, pro-gastrin-releasing peptide 95.38 pg/ml. Antinuclear antibody (-), hemolytic anemia tests (-), direct antiglobulin test (-). Bone marrow aspiration: normal bone marrow picture, Tuberculosis antibody (-), Blood sedimentation: 75.2 mm/h, Ultrasound examination showed ascites with a perihepatic depth of 1.93cm, a splenic fossa depth of 3.83cm, and a deepest lower abdomen of 4.39cm.

As patient's renal function had worsened after bilateral ureteral stents were placed, and he had no previous history of nephropathy, we suspected he might be suffering from a lower urinary tract obstruction. Serum creatinine decreased to 202umol/L after 3 days of indwelled catheter. Transurethral cystoscopy showed suspicious valve formation in the posterior urethra and no urethral stenosis. There was also no dysuria, so the possibility of lower urinary tract obstruction was excluded. Ureteroscopy showed that the lower part of the bilateral ureter, about 6cm from the ureteral opening, was narrow, and the Olympus F9.8/8.6 ureteroscope could not be passed. Consequently, we decided to perform urography after the removal of bilateral ureteral stents. Nonetheless, after the removal of the catheters, the patient experienced severe back pain, significantly reduced urine output, and his serum creatinine increased to 351 umol/L, so we had to emergently perform bilateral ureteral stent placement. Urine output was acceptable during the first 5 days, after which it progressively decreased, and abdominal distention developed. Reexamination of ultrasound showed ascites with a perihepatic depth of 4.16cm, a pelvic depth of 7.16cm, a distance between the right lower abdomen of 5.4cm, a distance between the left lower abdomen of 3.83cm, and intestinal floating. Abdominal catheterization drainage revealed the following: 15 hours drainage light yellow ascites about 3500ml, ascites examination: TP: 21.92g/L, ADA: 9.4U/L, color: yellow, LDH: 77U/L, creatinine 332umol/L, SG:1.014, RBC: 0, RIVALTA test: (-), NCC: 142*106/L. Pathology of ascites showed a large number of lymphocytes, a few mesothelial cells, and a few nuclear heterogeneous cells, while no definite malignant cells were found.

The patient's condition continued to deteriorate and was accompanied by abdominal distention, vomiting, and poor appetite. His highest level of creatinine was 470umol/L. A plain CT scan of the whole abdomen revealed bilateral hydronephrosis, bilateral ureteral stent placement, Splenomegaly, Abdominal and pelvic
effusion, Peritoneal thickening, and peritoneal exudative changes. The intestinal wall was thickened, and there was a small amount of air in the intestinal lumen. As the obstruction could not be relieved after the placement of ordinary ureteral stents, bilateral PCN was performed to prevent the further deterioration of renal function. Multiple organ fibrosis IgG4-related disease or renal disease was suspected, but serum IgG4-level was 353mg/L. Pathological results of the liver biopsy showed that some hepatocytes were slightly swollen, while only a few lymphocytes were seen in the portal area. Immunohistochemistry: IgG4 (-), CD38 (few lymphocytes +). Pathological results of renal needle biopsy showed results consistent with moderate to severe chronic tubulointerstitial injury, i.e., IgG (-); IgG4 (-). Finally, laparoscopic exploration was performed, and intraoperative findings revealed numerous small, shiny, whitish nodules carpeting all visualized peritoneal and some parts of intestinal tube surfaces. Also, some small nodules were fused into larger pieces nodular. The tumor infiltrated the entire omentum, forming a large, firm mass. Intestinal peristalsis was restricted (Fig. 1). Biopsy from the omentum itself confirmed Peritoneal mesothelioma. Histological findings that fibrous tissue hyperplasia with inflammatory cell infiltration and papillary hyperplasia of the overlying mesothelium tended to be papillary mesothelioma. The immunohistochemical markers were as follows:: Calretinin (+), CK (+), Desmin (-), HMB45 (-), Ki-67 (10%+), CD34 (-), MC (HBME-1) (+), Melan-A (-), and B-Catenin (+). (Fig. 2)

Unfortunately, the patient refused to undergo therapy and chose to be discharged for recuperation. During the follow-up, he died at home 1 month after discharge.

3. Discussion

Malignant peritoneal mesothelioma is an aggressive neoplasm of the serosal membranes that was first reported by Miller and Wynn in 1908[2]. It accounts for approximately 25% of malignant mesotheliomas. The median age at diagnosis is 60, and it affects more men than women, with a male-to-female ratio of 3:1[3].

Asbestos exposure is a well-recognized high-risk pathogenic factor for MPM[4]. The onset of mesothelioma is insidious, and symptoms are related to the extent of the tumor spread within the abdominal cavity. Patients with peritoneal mesothelioma usually present with abdominal pain, distention, ascites, intestinal obstruction, weight loss, abdominal mass, or other signs of advanced disease[1]. Hydronephrosis rarely occurs as the first symptom, and only a few such cases have been reported thus far. We searched PubMed for articles addressing „Peritoneal mesothelioma“ and „Hydronephrosis“, finding 5 relevant articles that were screened by title and abstract. Two articles were finally included in the review. Detailed case data of 4 patients were obtained (Table 1).

| Table 1. | Characteristics of 4 cases of peritoneal mesothelioma presenting with hydronephrosis screened from PubMed and our patient. |
Among these cases, the patient with benign cystic peritoneum mesothelioma had the longest survival. However, she continued to suffer recurring episodes of small bowel obstruction and combined with colovesical fistula, this further aggravated her quality of life. The patients with malignancies survived only a few months after the first diagnosis. Among 5 patients, 4 had combined bilateral hydronephrosis. Ureteral stenting was initially used in most patients to drain hydronephrosis. Renal function improved in two patients, which was not the case with our patient. Bilateral ureteral stenting was performed from the initial onset in a local hospital. However, CT showed progressive exacerbation of bilateral hydronephrosis during the course of the disease (Fig. 3).

After the indwelling of the ordinary ureteral stent, the obstruction was not removed. However, the patient’s renal function steadily improved after PCN. At the same time, the patient's hemoglobin also gradually increased, and the improvement of the whole body condition provided the possibility for subsequent treatment. Therefore, the drainage mode should be considered when dealing with ureteral obstruction.

In cases of non-malignant ureteral obstruction, such as stone disease, ureteral stricture, or congenital ureteropelvicureteric junction obstruction, or idiopathic retroperitoneal fibrosis, the goal is to relieve the obstruction, reduce sepsis and protect renal function. The selection may be influenced by the severity of the disease, stone size, stone location, and final definitive stone management [7]. Previous studies have shown that PCN and ureteral stenting have high success rates [8]. PCN is usually successful in cases where stent placement is unsuccessful, while the reverse is not always true. In addition, PCN is often chosen over ureteral stents in patients with larger stones or more severe diseases. The initial drainage method is related to the final lithotripsy selection method. Patients treated with PCN were more likely to receive deterministic percutaneous therapy, while those treated with ureteral stents were more likely to receive ureteroscopy [9].
Malignant ureteral obstruction (MUO) is a hydroureter caused by an advanced tumor or retroperitoneal tumor pressing on the ureter. Ureteral obstruction due to malignancy is an ominous sign. The disease progression is serious and can easily lead to stent occlusion of bilateral obstruction cases. Our goal was to adequately drain the upper urinary tract and maintain renal function while relieving symptoms, thus allowing the initiation of systemic therapy while reducing further urological intervention, hospitalization, and negative impact on the quality of life. Treatment options include retrograde ureteral stenting, PCN, and surgical resection of the obstructed segment. Currently, there is no consensus on the optimal method for urinary decompression. In the case of malignant obstruction, ureteral stenting has been associated with technical limitations and high failure rates. Feng et al. confirmed that in patients with malignant pelvic tumors, the initial success rate of stent implantation was 71%, the incidence of late stent implantation failure was 41%, and the success rate of PCN implantation was 100%. In this study, 89% of cervical cancer patients failed initial stent placement, and 92% eventually required percutaneous drainage.

In their study, Ku et al. reported that gradual loss of patency after ureteral stenting was more likely compared with PCN, with the incidence of diversion failure secondary to obstruction of 11% and 1.3%, respectively.

Other studies authored by Docimo et al., Cheung et al., and Yosspeowitch et al. showed that the postoperative stent failure rate of extrinsic malignant ureteral obstruction was 42%-45%. Despite the high rate of failure of ureteral stents, no difference in median survival was found between the two modes of treatment. However, PCN requires an external collection device, which often results in a reduced quality of life, and some patients may initially reject the procedure.

Even so, PCN is still considered a reliable drainage method for advanced malignant tumors, especially for cases with unsuccessful stent placement. Metallic stents and some new materials stents provide more options. In their study, Asakawa et al. reported that the incidence of metal stent failure was 15.4%, which is superior to conventional polymeric stents (25–40%), often requiring nephrostomy.

Because the metal bracket has a disk steel wire structure, it can maintain patency and drainage even under strong external pressure. It can also last for a long time before requiring a replacement. Considering that the median survival time of patients with MUO is < 12 months, it is highly likely that these patients will not require stent replacement during their lifetime. While some scholars suggest metal stents as the first choice for extrinsic ureteral obstruction caused by MUO, Brown et al. mentioned that stent obstruction appears to be increased in patients with urinary tract infection after metal stent insertion. Also, the patients who received radiotherapy had a higher failure rate.

Type and level of obstruction, renal insufficiency, degree of hydroureter, systemic treatment after stent insertion, cystoscopic evidence of bladder invasion, and length of obstruction > 3 cm were identified as predictors of stent failure in patients with malignant ureteral obstruction. Accordingly, all these aspects should be taken in consideration when making a final choice. Clinician preference and patient comfort...
are also important factors. Therefore, the patient should be fully informed of the available options, which should be comprehensively evaluated, and both parties should reach an agreement to relieve patients' pain and improve their quality of life as much as possible.

Diagnosing MPM is extremely challenging because of its slow onset, long incubation period, and atypical clinical symptoms. The condition is also easily misdiagnosed as tuberculous peritonitis, or intestinal and ovarian tumors. At present, the most commonly used serum markers include CA125, CA153, mesothelin-related protein, serum high mobility group box-1 protein, hyaluronic acid, and osteopontin. Baseline CA125 and CA153 levels were found to be elevated in 53.3% and 48.5% of patients, respectively[21]. Imaging evaluation methods are CT scan, Magnetic Resonance Imaging (MRI), and Positron Emission Tomography (PET), which are characterized by irregular or nodular peritoneal or mesenteric thickening, omental mass, and ascites[5]. MRI can more accurately evaluate the degree of tumor progression and quantify the peritoneal carcinomatosis index (PCI) score. It can also more accurately evaluate the disease stage[22]. PET can be used to distinguish benign lesions and malignant mesothelioma. In addition, PET can be used for preoperative staging, which is more accurate than CT in determining lymph node status and more sensitive than CT in detecting potential recurrent lesions. The sensitivity, specificity, and accuracy of PET were reported to be 86%, 89%, and 87%, respectively[23]. However, the gold standard for MPM diagnosis is still the pathological result of needle biopsy or laparoscopic biopsy. Histopathological diagnosis mainly includes routine hematoxylin-eosin (HE) staining and immunization histochemical (IHC) staining. Morphologically, there are mainly three subtypes, epithelioid, sarcomatoid, and biphasic subtype; however, many variants exist. Tubular papillary type, micropapillary type, solid type, clear cell type, pleomorphic type, and myxoid type are some that have been described thus far. IHC staining is the most valuable and feasible method for the differential diagnosis of MPM. At present, there is no absolute specificity and high sensitivity marker[24]. The recognized positive markers are Calretinin, CK 5/6, WT-1, HBME-1, Thrombomodulin, Podoplanin, Mesothelin and D2-40, while TTF1, carcinoembryonic antigen (CEA), Ber Ep4, B72.3, MOC31 and CD15 are negative markers. It has been recommended to use at least two positive and two negative markers for differential diagnosis[25].

Our patient was a young man who initially presented with bilateral back pain, and his tumor markers were negative, as previously mentioned. Also, the initial CT examination showed only bilateral hydronephrosis (Fig. 3A), which could hardly be associated with peritoneal mesothelioma. However, with the development of the disease, the patient began to suffer from abdominal distension, abdominal pain, nausea, and vomiting. Also, ascites appeared in CT examination (Fig. 3B); however, they were without definite malignant cells. When the patient's condition continued to deteriorate, some characteristic changes were observed on CT, such as abdominal and pelvic effusion, peritoneal thickening, peritoneal exudative changes, and thickened intestinal wall (Fig. 4).

Eventually we opted for laparoscopic exploration, which revealed numerous small nodules carpeting all visualized peritoneal and some parts of intestinal tube surfaces, which could not be detected by CT. The tumor infiltrated the entire omentum and formed a large, firm mass that was more pronounced than on the CT. Histopathology of the case showed mixed subtype, while IHC staining showed two positive
markers, i.e., Calretinin (+) and MC (HBME-1) (+) (Fig. 2). The establishment of the diagnosis was challenging, highlighting the importance of laparoscopic exploration for some difficult-to-diagnose diseases. The accuracy of ascites cytology was only 50%[26]. Laparoscopy only requires a small wound and can be used to clearly observe the abdominal cavity. It can also more accurately evaluate the resectability of MPM and avoid ineffective open surgery, having lower complications and mortality. Laparoscopy is superior to CT in the evaluation of localized peritoneal metastases. The sensitivity, specificity, positive predictive value, negative predictive value, and accuracy of laparoscopic preoperative evaluation were found to be 100%, 75%, 96.6%, 100%, and 96.9%, respectively [27].

In 2011, Yan and colleagues[28] proposed a TNM staging system based on the extent of peritoneal disease burden (T), intra-abdominal nodal metastasis (N), and extra-abdominal metastasis (M) to standardize and guide the clinical treatment and prognosis evaluation of MPM. A total of 13 regions in 9 quadrants of the abdominal cavity and 4 segments of the mesentery were scored for disease severity (LS-0: no visible tumor; LS-1: tumor nodule ≤ 0.5 cm; LS-2: 0.5 cm Tumor nodules ≤ 5 cm; LS-3: tumor nodule 5 cm), and the scores of each quadrant were summed to calculate the PCI. The proposed TNM staging system stratifies PCI into quartiles (1–10, 11–20, 21–30, > 30) as a surrogate for the T stages 1–4. The 5-year survival rates of stage I, II, and III patients were 87%, 53%, and 29%, respectively. According to this system, stages were enumerated based on survival. Patients with T1N0M0 disease had a 5-year survival of 87% and were grouped as stage I. Patients with T2N0M0 or T3N0M0 had a similar 5-year survival of 53% and were grouped as stage II. The 5-year survival of patients with T4M0 and/or M1 disease was poor (29%) and was categorized as stage III. The stage was an independent prognostic factor for malignant peritoneal mesothelioma[29]. The patient, in this case, had T4N0M0 and was grouped as stage III based on this system. His final survival time confirmed the poor prognosis.

Cytoreductive surgery (CRS) combined hyperthermic intraperitoneal chemotherapy (HIPEC) is the initial preferential treatment for MPM. CRS can achieve optimal drug exposure of minimal residual lesions by removing lesions and separating abdominal adhesions, thus improving the efficacy of HIPEC. It was reported to extend overall survival from a median of 6 months in treatment-naïve patients to 34–92 months in those undergoing CRS and HIPEC [30]. It is believed that patients with total peritoneal resection have better prognoses than patients with selective peritoneal resection, with a 5-year survival rate of 63.9% and 40.0%, respectively[31]. There is still no consensus on chemotherapy for the HIPEC regimen. Improved overall survival was found with platinum-based regimens [32]. Systemic therapy is an alternative treatment for inoperable patients or those wishing to pursue nonsurgical management. Pemetrexed combined with cisplatin is the first-line chemotherapy regimen for MPM, with a response rate of 26.0% and a disease control rate of 71.2%[3]. However, it had a limited effect on improving the prognosis of the patients, as the median survival time of the patients was 13.1 months.

In recent years, molecular therapy and immunotherapy have attracted increasing attention. Most studies identifying relevant molecular pathways have been performed in pleural mesothelioma. Targetable pathways in MPM are being identified. Although 31% of MPM patients have EGFR overexpression [33], the
tyrosine kinase inhibitors (TKIs) axitinib, sorafenib, and imatinib did not show any significant activity in malignant mesothelioma cases [34]. BAP1, TP53, NF2, and ALK, which are commonly mutated genes in MPM [35], are expected to become potential therapeutic targets. An encouraging finding was the demonstration of ALK rearrangements in 3% of the patients with MPM [36], especially in young patients with no previous history of exposure to asbestos. While pleural mesotheliomas did not show ALK rearrangement, it is hoped that at least this small subgroup of patients could benefit from treatment with ALK inhibitors and immune checkpoint inhibitors, including cytotoxic T-lymphocyte associated protein 4 (CTLA-4) and programmed cell death 1 (PD-1). Tani et al. [37] found that CTL combined with chemotherapy was effective for DMPM. A phase II clinical trial [38] showed that tremelimumab, an anti-CTLA4 antibody, could be used as a second-line treatment for mesothelioma, with a disease control rate of 31.0% and progression-free survival (PFS) of 6 months. Numerous studies reported that PD-1 inhibitors nivolumab, pembrolizumab, and PD-L1 inhibitor avelumab have good clinical efficacy and safety, thus providing a new treatment option for patients with advanced mesothelioma. However, there is still no targeted study on peritoneal mesothelioma.

Unfortunately, our patient refused to undergo therapy but chose to be discharged for recuperation. He died at home some 5 months from disease onset. Patients with MPM have a poor prognosis with a median survival of 3–6 months if left untreated, 11–17 months with chemotherapy alone, and 55–61 months with CRS combined with HIPEC. A 5-year survival rate is 52% [39][40]

4. Conclusions

Herein, we reported the case of a 30-year-old man with peritoneal mesothelioma, which is a rare and difficult-to-diagnose malignancy. The patient presented with bilateral hydronephrosis and renal insufficiency as the initial manifestations. He had no history of exposure to asbestos and no obvious signs of tumor on CT. The hydronephrosis worsened after bilateral ureteral stents were inserted, and the patient’s condition progressively deteriorated. Finally, the diagnosis was confirmed according to the histological and immunohistochemical results of the laparoscopic exploration of the greater omentum tissue biopsy. Unfortunately, the patient refused to undergo therapy and eventually died at home. Urologists should consider the possibility of MPM in cases of unexplained bilateral hydronephrosis, especially in combination with ascites. A comprehensive evaluation should be done when selecting PCN or ureteral stenting in the management of malignant ureteral obstruction. In addition, MPM is a very rare malignancy with a poor prognosis. The standard gold treatment remains CRS combined with HIPEC, which may improve the prognosis for patients who can tolerate surgery or have resectable lesions. Molecular therapy and ongoing immunotherapy trials could potentially offer a new treatment approach.

Abbreviations

MPM
Malignant peritoneal mesothelioma
PCN
Percutaneous nephrostomy

CT
Computed tomography

MUO
Malignant ureteral obstruction

MRI
Magnetic Resonance Imaging

PET
Positron Emission Tomography

PCI
peritoneal carcinomatosis index

HE
hematoxylin-eosin

IHT
immunization histochemical

CEA
carcinoembryonic antigen

CRS
Cytoreductive surgery

HIPEC
hyperthermic intraperitoneal chemotherapy

TKIs
tyrosine kinase inhibitors

CTLA-4
cytotoxic T-lymphocyte associated protein 4

PD-1
programmed cell death 1

PFS
progression-free survival

Declarations

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J.S.L. contributed to data collection and analysis and was a major contributor in writing the manuscript; J.H.P., H.Z. contributed to manuscript writing and the review of the manuscript; C.H.Z., G.Q.Z. contributed to literature collection and the writing of the original draft; L.N.W. contributed to production of pathological pictures. All authors have read and agreed to the published version of the manuscript.

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Institutional Review Board Statement

The study was approved by ethics committee of the Guiqian International General Hospital.

Informed consent

The patient has consented to the submission of the case.

Conflict of interest

The authors have no conflicts of interest to disclose.

Availability of data and materials

All data generated are included in this article.

References


27. laparoscopy to evaluate optimal candidates for cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (HIPEC) in patients with peritoneal mesothelioma[J]. In Vivo, 2009, 23(1): 187-190. PMID:19368148.


**Figures**

(A) Numerous small nodules carpeting all visualized peritoneal and some part of intestinal tube surfaces.  
(B) The tumor infiltrates the entire omentum and forms a large, firm mass.
Figure 2

Histology and Immunohistochemistry of the omentum. A and B: A mass of cells lined with a papillary structure of monolayer flat/cuboidal mesothelial cells with a milder nucleus and acidophilic cytoplasm (H&E, ×100). C and D: immunohistochemistry for Calretinin and MC (HBME-1) are shown (×100).
progressive exacerbation of bilateral hydronephrosis during the course of the disease. (A) Plain CT scan of the abdomen on July 9, 2022, Longli County People's Hospital. (B) Contrast-enhanced abdominal CT on September 21, 2022, Qiannan People's Hospital of Guizhou Province. (C) Plain urinary CT scan on October 24, 2022, Guiqian International General Hospital.
Figure 4

Plain urinary CT scan on October 24, 2022. (A) The intestinal wall was thickened. (B) Omentum thickening and peritoneal exudative changes.